

## Effect of color noise on the processing of optical signals using the swarm intellect algorithm

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### Abstract

© 2016, Allerton Press, Inc. An approach based on stochastic particle swarm optimization is used for the mathematical processing of spectral profiles with noise. Noises with different values of the Hurst index, which characterizes the noise component based on the prevalence of its low- or high-frequency components, is used to test the algorithm's stability with respect to noise. The Hurst index is varied from 0.1 to 0.9. The effect color noise with levels of 1 to 10% has on the processing of optical signals using the particle swarm optimization algorithm is analyzed. The method is shown to be stable with respect to noise with a level of 10% if the Hurst index does not exceed a value of 0.5.

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